

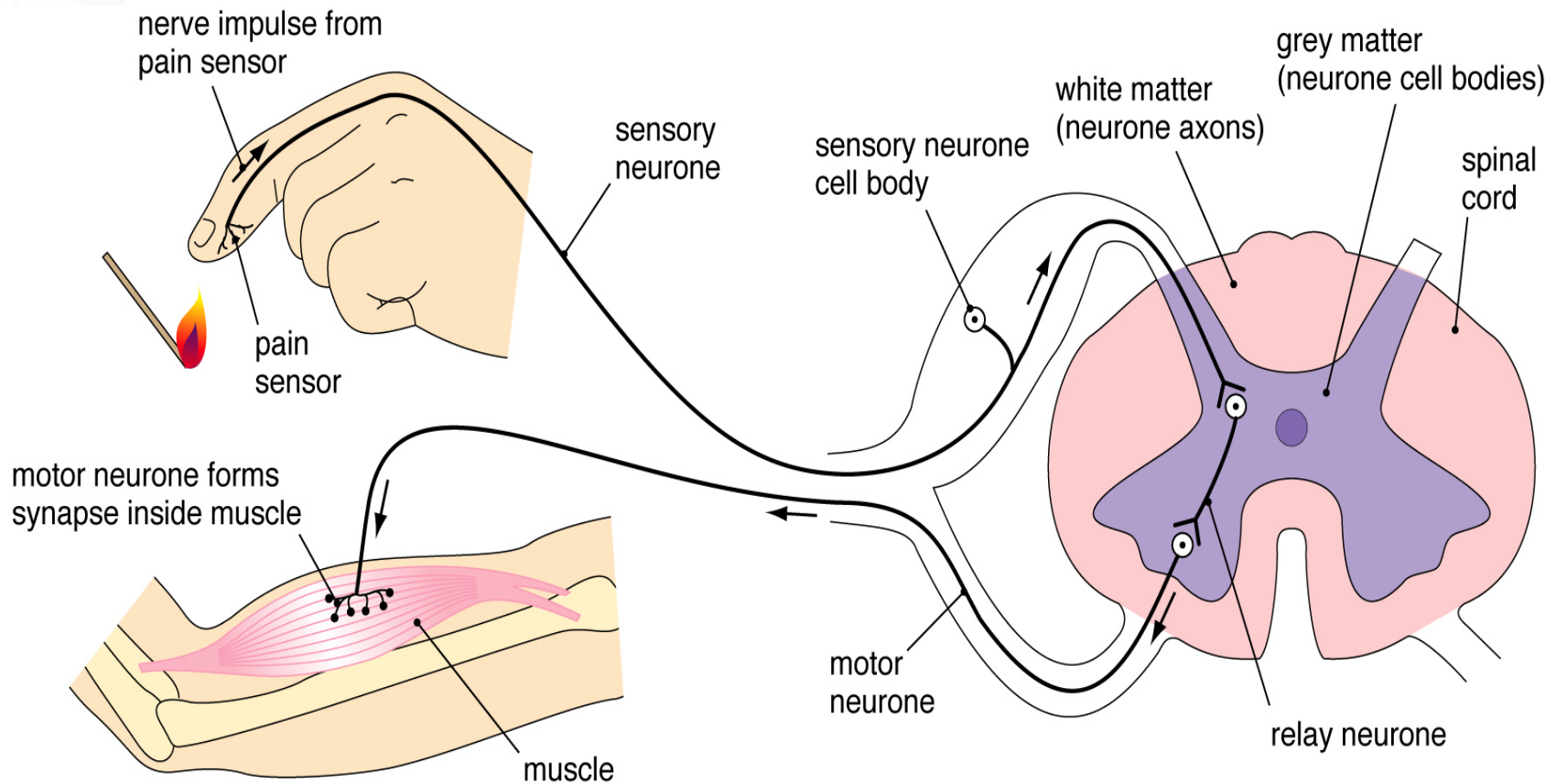


Control

Reflex actions & Synapses



Reflex actions





Reflex Arc Steps

- Stimulus (what causes a reflex)
- Receptor (found in sense organs)
- Sensory Neuron (carries an impulse to interneurons)
- Interneuron (found in the spinal cord and sends an impulse to the motor neuron)
- Motor neuron (Carries the impulse to the muscles)
- Effector (Muscles that move from a reflex)



Receptors, effectors

- Stimuli affect **receptors** in sense organs such as eyes and ears
- **Receptors** change one form of energy (a stimulus which is not an electrical impulse) into an electrical impulse.
- The organs that respond to stimuli are **effectors** – the **muscles** and the **glands**

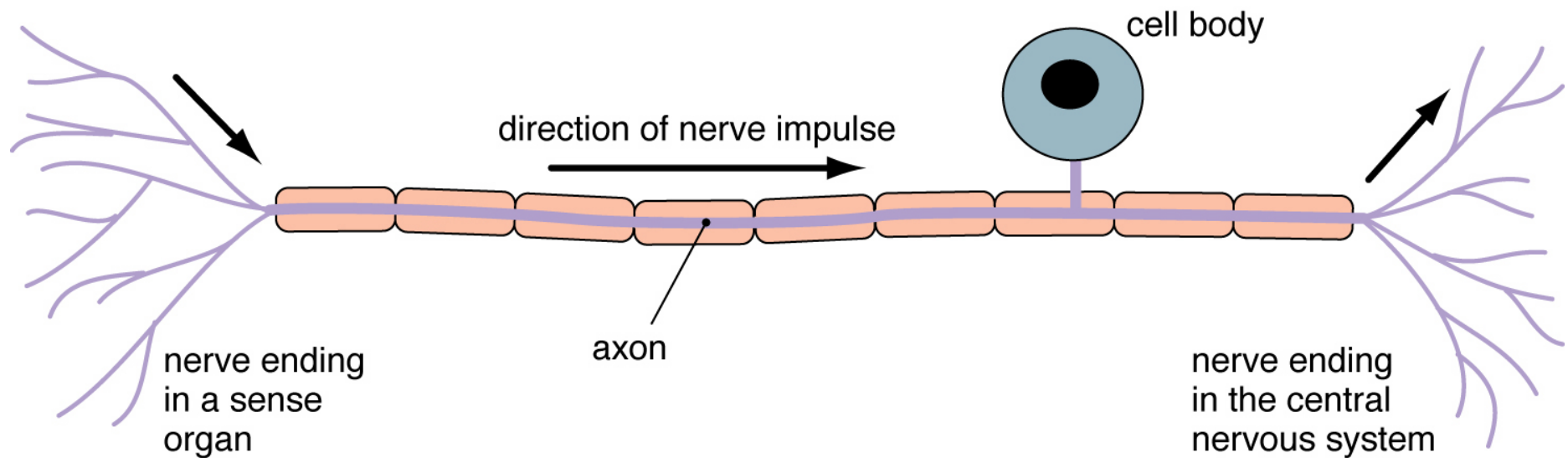


Reflex Actions and synapses: the key points

- A **reflex action** is rapid, automatic response to a stimulus often to avoid harm.
- A reflex action involves a **reflex arc**. An electrical impulse travels from the **receptor** along a **sensory neuron**, to a **interneuron neuron** in the spinal cord, it leaves the spinal cord. It leaves the spinal cord in a **motor neuron** and reaches an **effector** (eg muscle or gland) which responds to the stimulus.

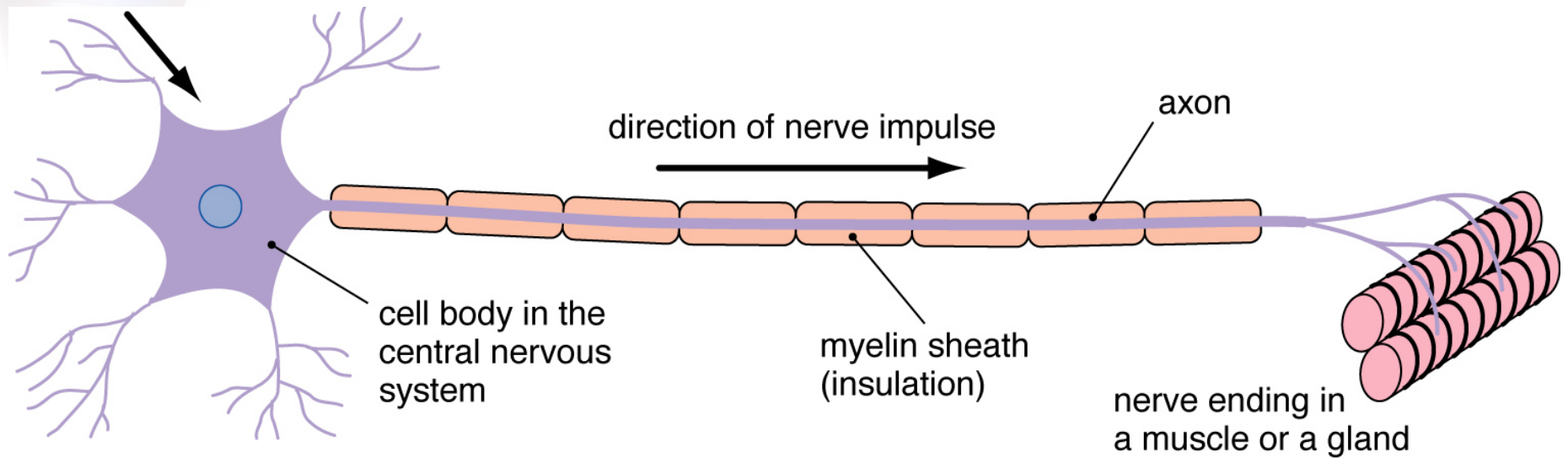


Sensory neuron



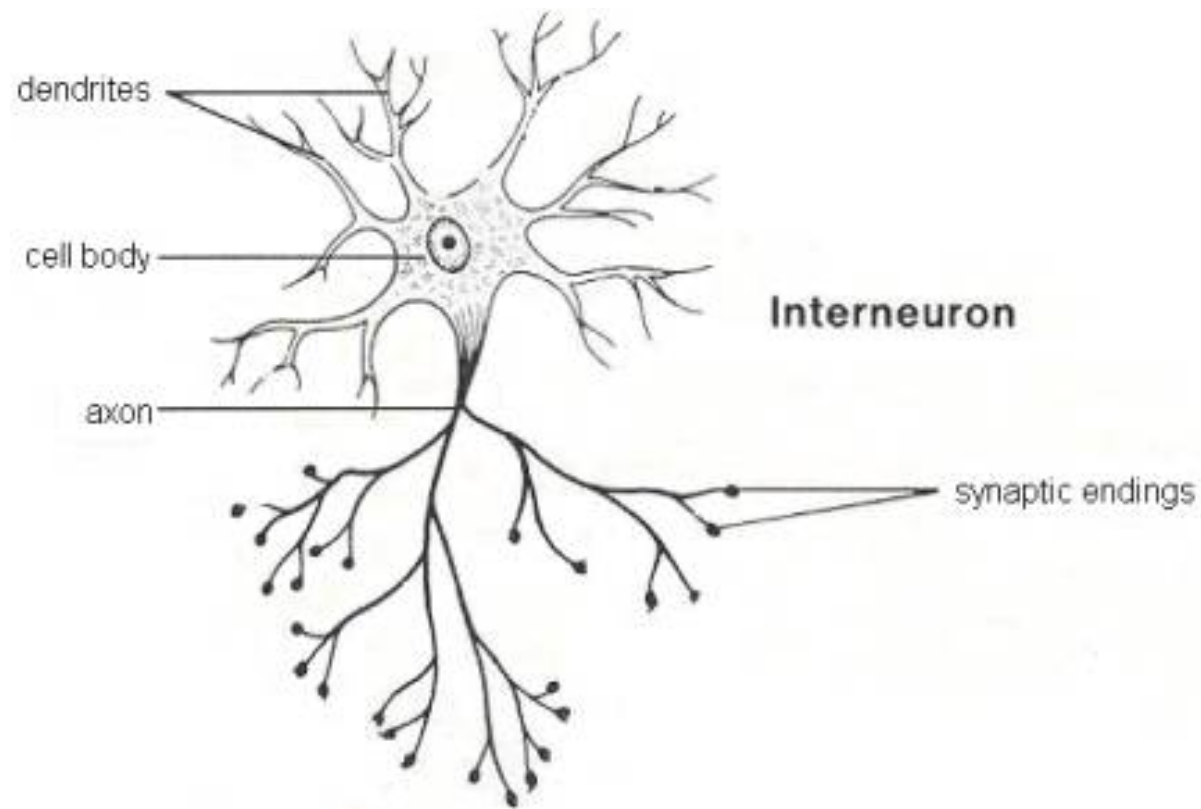


Motor neuron



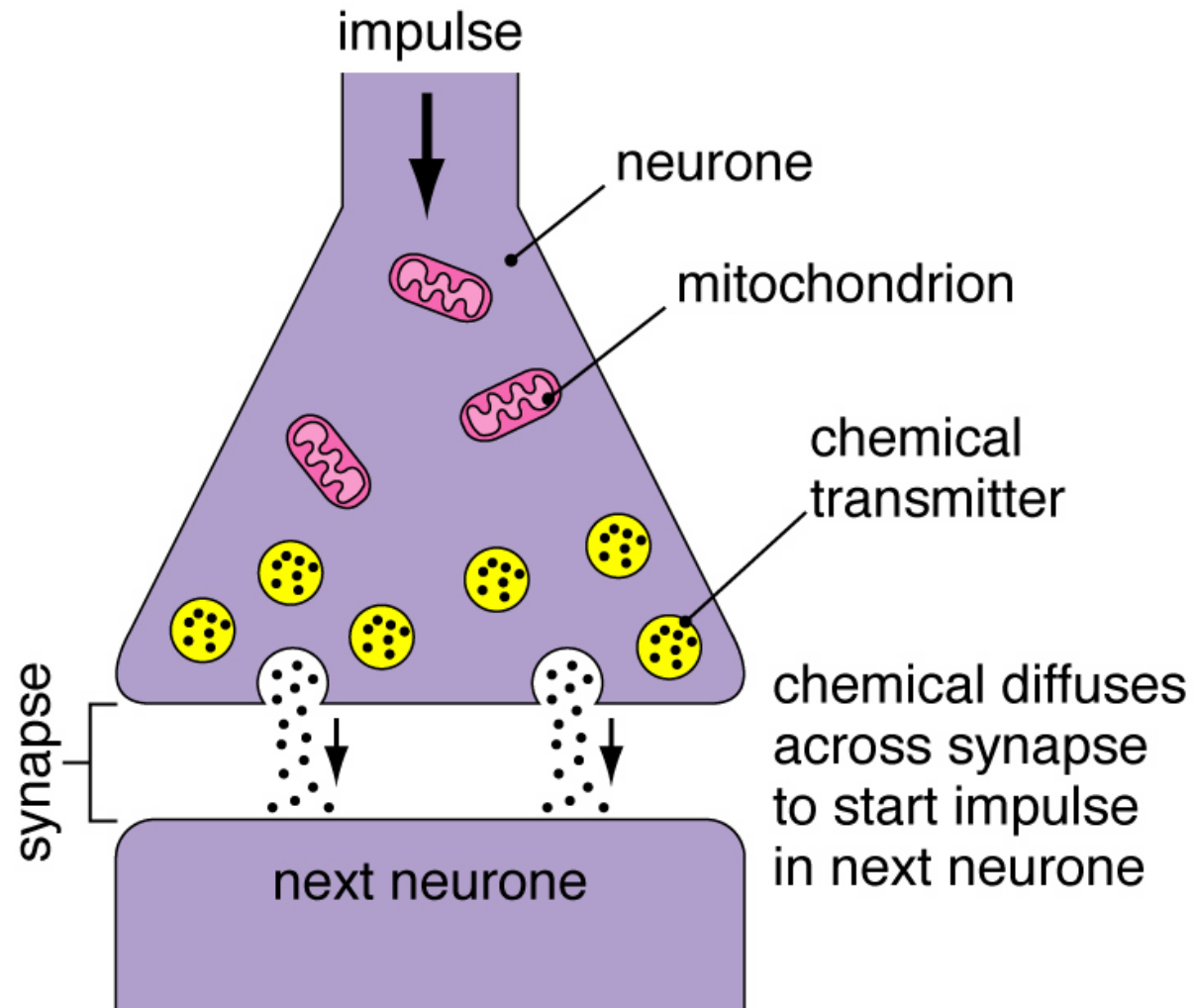


Interneuron(Relay)





Synapses





Synapse facts

- Two neurones join at a **synapse**. The electrical impulse arriving at the end of one neurone causes a chemical to be secreted into the gap. In the next neurone, the chemical initiates an electrical impulse that continues onwards.
- **Synapses** slow down nerve impulses, but a neurone can form synapses with several neurones, and this enables us to respond to a stimulus in more than one way.
- A relay neurone in the spinal cord has **synapses** with a sensory and a motor neurone. It also has synapses with neurones that carry nerve impulses from the brain, and information from the brain can override a reflex action